

Two Sandians on Elite Study Team

Bob Clem, director of Systems Sciences 1600, and Bruce Miller, manager of Directed Energy Research Department 1270, have been picked by the American Physical Society as members of a prestigious APS Study Group charged with formulating a definitive scientific report on directed energy weapons (DEW).

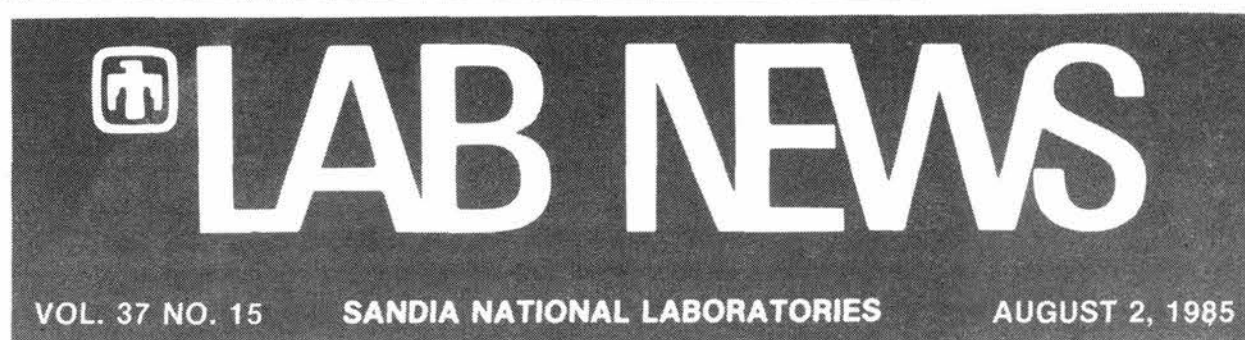
The DEW Study, scheduled for release in the spring of 1986, "will assess what is possible in long-range [thousands of kilometres] directed energy weapons in terms of the laws of physics," says Bruce. "Our study should provide the background needed for informed DEW debate." Such weapons, based on high intensity laser and particle beams, are still only a possibility, but they figure prominently in the Administration's Strategic Defense Initiative.

"We hope that our report will bring the scientific community up to speed in terms of what needs doing in directed energy research," adds Bob. "One of the really fascinating things about SDI in general is that it addresses a whole new set of problems in physics. So a review, like this one by APS, that's independent of the SDI effort it-

(Continued Next Page)



BRUCE MILLER (1270)
AND BOB CLEM (1600)



Dacey Press Conference at SNLL

Coal Research: 'Double the Dollars'

President George Dacey met with the Combustion Research Facility Advisory Board at Livermore last week to propose a national effort aimed at increasing coal research to meet the country's energy needs in the 21st century.

Later he talked with the Bay Area news media about some of the points made during the board meeting. A primary point was his concern for long-range research to help the nation become less energy dependent on foreign fuel sources. "The major resource that we have, that may have to be counted on over the long term future ... is coal. We've got abundant coal, hundreds of years' worth, here in this country," he explained.

"The problem is that coal is not an easy substance to use — it's a solid instead of a liquid so you can't pour it into an automobile gas tank. It burns dirty — has sulphur in it — so it creates acid rain. And it's

hard to get out of the ground."

Despite these drawbacks, he sees this fossil fuel as the answer to the nation's energy needs: solar energy could, at best, provide only a relatively small percentage of U.S. needs for electricity in the future, and nuclear power is in the doldrums because of environmental effects, waste disposal problems, and the public's perception.

"It's my view that we are putting money disproportionately into other forms of energy research, such as solar and fusion, compared to the promise of coal, which is already here. So what I discussed with the advisory board was 'Are there some reasonable programs that would convince the country it ought to be spending more money on long-range coal research, even, to some extent, at the expense of other energy research that is now going on?'"

He said there was almost total

agreement among board members that coal, as a major national resource, justifies more research. But there was little concurrence on how much ought to be spent, how to administer it, and who should get the funding — national labs, private industry, or universities.

"That's part of the problem: if you ask why we are spending more on fusion research, which will not pay off for many decades, than on coal research, with its much shorter time scale for pay off, it's because there is no general agreement within the constituency of coal producers and users. It's a fractionalized industry ... there's not a unified coal lobby."

Dick Claassen (8000) pointed out that the advisory board did concur that coal research should continue at the highest funding level possible. And he added, "Virtually all the increase in coal usage will be inside electric power plants, replacing oil and gas-fired systems. But we need a lot more research on how to burn coal in an environmentally sound manner."

George emphasized that he didn't intend to confuse the role of the Combustion Research Facility — which concentrates on understanding the basic process of how materials, including coal, burn — with the overall problems of coal combustion that the whole country faces. The latter is "a much broader issue than we are prepared to tackle alone," he added.

The country nationally spends only \$4 million to \$5 million annually on fundamental coal research (\$1 million of that at Livermore). George would like to see that figure doubled for starters. "It seems piti-

PRESIDENT DACEY advocated increased coal combustion research at a press conference last week in Livermore.



(Continued on Page Three)

Antojitos

Warning: Split Infinitives Most people, I believe, hate to write. Writing anything beyond a personal letter is parading your naked mind down Central Avenue, and only those of us who are verbal streakers enjoy that.

At the same time, just as many people are pretty sure they could be great photographers if they just bought expensive cameras, so they believe they could probably be great writers if they just had time to sit down with pencil and paper.

And how do they define great writers -- beyond those who write best sellers and get invited to exchange witticisms on the talk shows? It's that great writers are those who never, absolutely never, split any infinitives.

Unfortunately, many of them can't define this grievous fault. So here, as a public service to the cause of great unborn literature, I present a mini-lecture (condensed and shamelessly plagiarized -- time for a commercial break -- from my Out-of-Hours course in Basic Writing Skills offered Tuesday and Thursday after work this fall) on the subject.

An infinitive is the "to" form of a verb. "To be" is the most common one, the one that Hamlet made into a hit, but every verb has an infinitive form: to sleep, to dream, to wake, to love, to hate, to die, etc. In Latin, the infinitive was always one word, not two, just as most of our other verb forms are: sleeping, dreaming, waking, loved, hated, died, etc. So in Latin, the infinitive simply could not be split -- that is, no other word could be inserted into the middle of it.

The English scholars of the 17th and 18th centuries considered Latin the perfect language (for good reason: it was dead so it would lie still for analysis), so when they needed a model for English grammar, they used Latin.

Unfortunately, English is a Germanic language, not a Romance one like Latin, so many of the rules had to be force fit. That's just what they did -- and we inherited a rule kept alive by generations of grade school teachers: Never split infinitives.

To slavishly follow a misbegotten precept, one that too often results in the adverb being buried at the end of the sentence rather than next to the verb it modifies, strikes me as an affectation that detracts from easy comprehension and does little but call attention to itself. But if knowing the rule helps you finally to write/to write finally/to write your great story finally [choose one], that's my reward.

* * *

If economics is the dismal science, grammar is the dismal art. ●BH

Continued from Page One

Study Team

self will serve a most useful function."

The APS Study Group is co-chaired by Nobel prize-winner Nicolaas Bloembergen of Harvard and Kumar Patel of AT&T Bell Labs. Other members are Abraham Hertzberg, University of Washington; Lt. Col. Thomas Johnson, U.S. Military Academy, West Point; Ronald Kerber, Michigan State University; Thomas Marshall, Columbia; Walter Morrow, Jr., MIT Lincoln Labs; Edwin Salpeter, Cornell; Andrew Sessler, Lawrence Berkeley Labs; Jeremiah Sullivan, University of Illinois; James Wyant, University of Arizona; Amnon Yariv, California Institute of Technology; Richard Yare, Stanford; Charles Hebel, a 1968-73 director of Physics Research at Sandia and now with Xerox Palo Alto Research Center; and Petras Avizonis, KAFB.

Avizonis, along with Bob and Gerry Yonas, former director of Sandia's Pulsed Power Sciences and now chief scientist with the SDI Office in Washington, was a member of the Fletcher Panel that met in Washington two summers ago to explore SDI concepts (LAB NEWS 10/28/83 and 11/9/84).

The Study Group will spend the next two weeks in La Jolla, Calif. "It's a beautiful area, but we'll hardly have time to enjoy it," says Bruce. "We'll be hammering out early drafts of the report, answering such questions as 'Where are the risks in the physical principles involved?' and 'What are the key areas of technology to be studied first?'"

"We'll avoid the political questions, such as the implications for arms limitation talks," adds Bob. "The primary challenge will be to end up with an unclassified report that can stimulate active discussion of DEW in the scientific community."

Another challenge for the group will be to fashion a report that will "blunt the confrontational arguments that at present are impeding our usual scientific consensus," says Robert Wilson, president of APS.

A DEW Review Committee will advise APS about the implications of the Study Group's report. Chaired by George Pake of Xerox Corporation, membership includes Michael May, LLNL; Arthur Schawlow, Stanford; Charles Townes, UC Berkeley; and Herbert York, UC San Diego. Funding for the entire project is provided in part by the Carnegie Corporation and the MacArthur Foundation.

Other than to note that the Study Group needs some expertise from DEW insiders, both Bob and Bruce are becomingly modest when asked why they were chosen. So LAB NEWS asked each about the other. "It's a first class team from the physics point of view," says Bob. "I can say that because I'm probably the only member of the group without an advanced degree in physics. I'm sure that Bruce was chosen for his strong physics background and his wealth of experience in pulsed power applications."

"And Bob will keep the group focused on the realities of DEW -- the probables -- and keep us from getting hung up on the possibles," says Bruce. "And, as he proved when he played devil's advocate on the Fletcher Panel, he has a unique ability to attack weaknesses in the proposals of others without offending them."



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Welcome

Albuquerque

Michael Allen (6422)
Roy Flanders (3426)
Michael Fietze (3700)
Adelicio Herrera (3426)
Russel McRae (3426)
Gene Smit (3463)

California

Ferne Allan (3144)

Colorado

Ralph Tissot (1822)

Idaho

Tamara Ferguson (2346)

Kansas

Stephen Tomari (7841)

Texas

Mark Vaughn (5163)

Virginia

Richard Carson (2531)

Coal Research

fully small to me compared to the amounts we spend on less promising technologies."

He admitted that a major increase in coal research funding is going to be a difficult sales job, especially with current budget constraints and deficits. Another difficulty is that the public no longer perceives an energy crisis because there are no gas lines. "People aren't observing the

Advisory Board Members

Members of Livermore's Combustion Research Facility Advisory Board are: John Longwell, Professor of Chemical Engineering, MIT; Bruce Hannay, former Vice-President of Research and Patents, Bell Labs; Richard Balzhiser, Vice-President of Research, Electric Power Research Institute; Dale Compton, Vice-President of Research Staff, Ford Motor Company; William Gardiner, Department of Chemistry, University of Texas at Austin; Howard Palmer, Office of Graduate School, Penn State; Gerd Rosenblatt, Deputy Director for Energy Science, LBL; William Ballhaus, Director of NASA Ames Research Center; George Hill, Chemical Engineering Department, University of Utah; and Eric Reichl, former President of Conoco Coal Research.

55-mph speed limit and are buying bigger cars again. To sell a 30-year research program is always hard though, because the impact of such a program is off into your grandchildren's time, and you have to expend that money on faith."

He assured the reporters at the press conference that he will continue trying to sell coal research programs to various funding sources. He also said he was encouraged by a report, originating with the DOE's Energy Research Advisory board, that indicates an interest in the same problem. "The understanding that we ought to be doing more than we are [in energy research] is growing. So it's a broad-front approach with a lot of people involved."

Welcome

California

Michael Stewart (8175)
Bradley Clark (8255)
Ken St. Hilaire (8184)
Pamela Kanaley (8184)

Idaho

David Barry (8175)

Iowa

Kevin McCarty (8352)

Oregon

Khanh Trinh (8243)

Washington

Spencer Klapp (8153)

Wisconsin

Richard Steeper (8473)
Wilhelm Wolfer (8341)

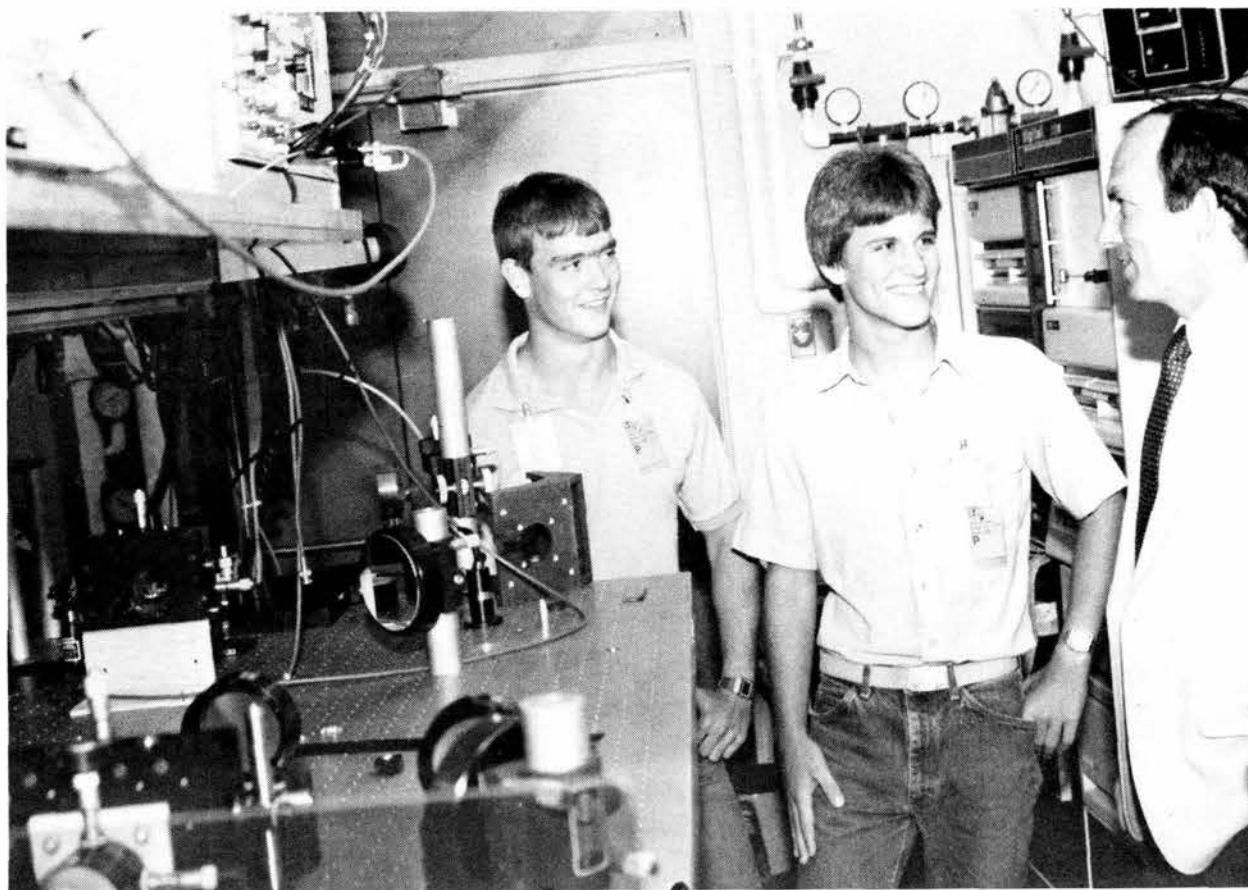


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VISITING SCIENCE FAIR WINNERS Trey Collier, left, and Jerry McAlwee talk with Dan Hartley (8300) in the Laser Doppler Velocimetry Lab.

Science Fair Winners Visit Combustion Research Facility

Two high school students who were top award winners at the International Science Fair in May spent a day recently at the Combustion Research Facility discussing their areas of interest with Sandia scientists working in similar areas.

Friona, Texas, high school senior Trey Collier and high school junior Jerry McAlwee of Palm Bay, Fla., were two of ten DOE Special Energy Award winners selected from the field of 600 competitors at the 36th International Science and Engineering Fair in Shreveport, La. They and their faculty advisers were flown to California for a week at Lawrence Livermore National Laboratory.

But Trey and Jerry happened to have constructed combustion-related projects that paralleled Sandia's work in that field, so Dan Hartley (8300) invited them to spend part of their visit at the Combustion Research Center. They were hosted by Tom Fletcher (8361) and Peter Witze (8362).

Trey's winning experiment was "Fluidized Bed Combustion — A Hot Idea" and involved a coal-burning apparatus he devised. "I modeled the fluidized bed combustion process, in which you fluidize a bed of sand by injecting air into it. You burn the coal particles on top of the sand, which is a much more efficient system than others because sand holds in the heat better than air," he explains (LAB NEWS, May 24, 1985). He appreciated the opportunity to see Sandia's coal particle burning experiment

up close. He was accompanied by his adviser, Richard Tullis, who teaches chemistry and physics at Friona.

In his project, Jerry "applies exhaust gas heat from an internal combustion engine to the fuel-air intake mixture. This means a more complete combustion and more homogeneous mixture within the cylinder." He was most impressed with Sandia staffers' ability to measure the effects of swirl on engine combustion.

But he has conducted some pretty impressive work himself. He built his own dynamometer to measure his engine's output, and he convinced the people at the Florida Institute of Technology to let him use their gas chromatograph for exhaust gas analysis. His adviser is Bill Lavinghousez, who teaches a special research class that trains students how to select experiments, then how to develop them and compete in science fairs.

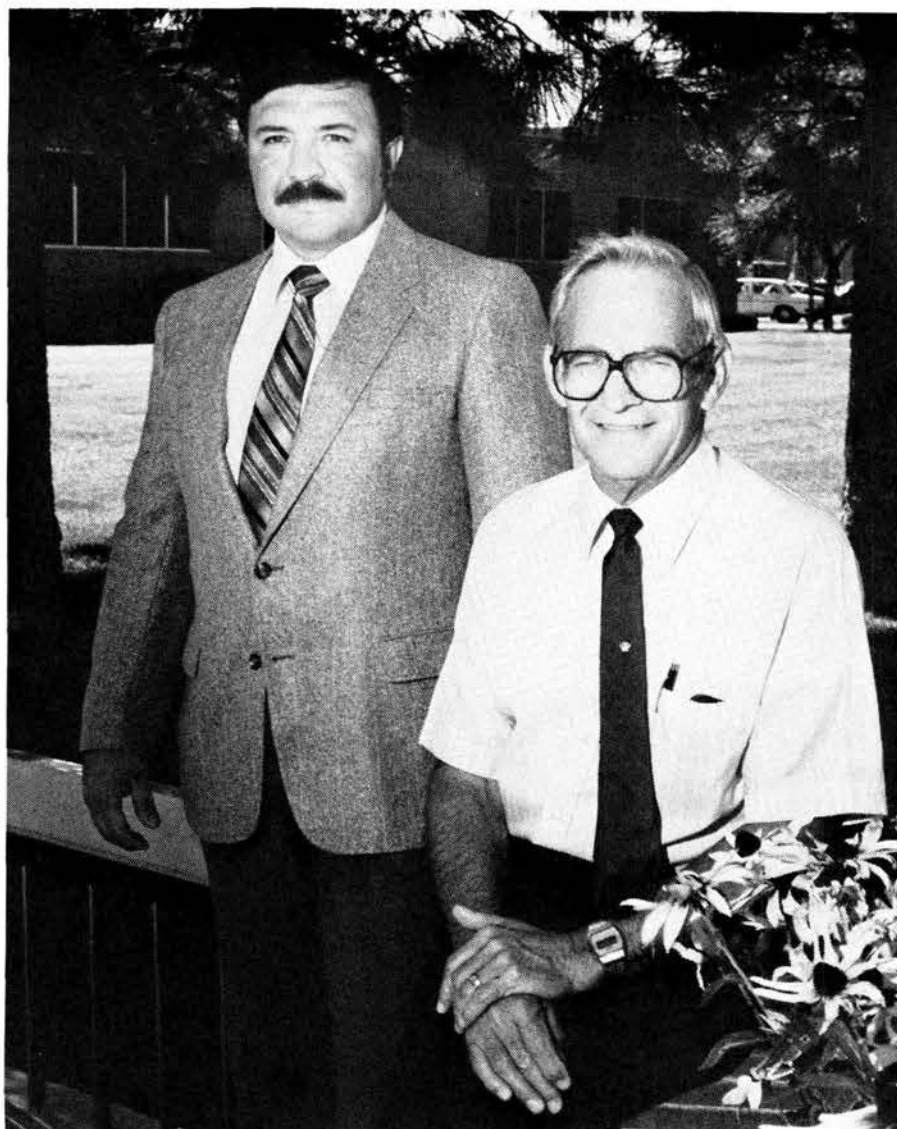
Trey will major in chemistry at Texas State this fall. Jerry plans to major in mechanical engineering at Georgia Tech after his senior year in high school.

The other eight DOE award winners and their advisers also visited Sandia for an overview of the Labs and to tour the combustion facility.

Congratulations

Susan (8153) and Victor George, a son, Christopher James, June 19.

SAM ORTEGA (3434) and
DON BICKELMAN (7231)



Supervisory Appointments

SAM ORTEGA to supervisor of Security Operations Division I, North Force, 3434, effective July 1.

Since joining the Labs as a security inspector in October 1977, Sam has been promoted to Lieutenant, Captain, and Major. He was with the Belen Police Department before coming to Sandia.

Sam has attended U of A classes in police science. He enjoys shooting, basketball, and football. He and his wife Joline have two children. They live in Belen.

DON BICKELMAN to supervisor of System Studies Division 7231, effective June 16.

Don first joined the Labs in Sept. 1956 as a member of a weapons project team. He later worked in nuclear safety studies and with a PAL group. Don left Sandia in 1965 and returned 10 years later to work with his present group, System Studies Division 7231.

He received his BS in industrial engineering from Carnegie-Mellon University. Don enjoys playing golf. He and his wife Jane have two children at home. They live in the NE heights.

KEITH MILLER to supervisor of Applied Mechanics IV, Division 1524, effective July 1.

Keith joined the Labs in August 1977 as a staff member in the engineering analysis department. In 1980, he transferred to the advanced systems development group where he worked on the Homing Overlay Program. He left the Labs in August 1982 for a short stint with BDM Corporation. Since returning in May 1983, he's been with Advanced Systems Division I 1651.



KEITH MILLER (1524)

Keith received his BS, MS, and PhD in ME from the University of Wyoming. He's a member of ASME and AIAA and past chairman of the NM Section of ASME. He enjoys camping, gardening, and riding and training horses. He and his wife Dori have three children. They live in the south valley.

Sympathy

To Jim Hillman (7253) on the death of his son in Albuquerque, June 27.

To Thomas Hunter (6310) on the death of his stepfather in Florida, July 14.

To David Ortiz (7243) on the death of his mother in Santa Fe, July 13.

To Don Bauder (311) on the recent death of his father.

Commuter Notes

New Mexico's SECA (State Employees Commuter Association) vanpool program has attracted a bit of national attention. The state's first Federal Highway Administration's Award for Ridesharing has gone to Tom Martin, a state highway department traffic engineer and the father of SECA.

SECA began with six vans in 1977. There are now 58, with plans to buy seven more. The routes serve 700 commuters throughout central and northern New Mexico. The longest round-trip commute is 240 miles; the average trip is 112 miles. Collectively, SECA has provided its riders with more than 2.5 million accident-free miles of transportation to and from work. And the annual saving from reduced gasoline use is more than \$375,000.

Sandia has five SECA routes. The drivers are Raymond Jones (2313), McIntosh/Moriarty; Jim Hawthorne (2526 contractor), Santa Fe; Charlie Gray (3311), Corrales/Rio Rancho; Graham Yelton (7473-3), Sandia Park/Cedar Crest; and Dan Miko (7525), Edgewood.

In addition, Sandia is served by a Sandia Commuter Association van route serving Belen/Los Lunas — it's operated by John O'Hare (7521) and Manuel Trujillo (7473) — and a privately owned van driven by Paul Gabaldon (7476) serving Belen.

Sandia vanpools' longest round-trip routes: Santa Fe with 144 miles, Belen with 100, and McIntosh/Moriarty with 92.

For more information on current or proposed vanpools, call June Aydelotte (3543) on 4-RIDE.

Congratulations

Carol (1840) and Ed (1152) Vernon, a son, George Edgar, Jr., July 15.

Hank (3423) and Mary Ann (3426) Ortega, a son, Joshua George, July 2.

Regina (3426) and Patrick Jaramillo, a daughter, Yvette Margaret, July 24.

Norman (6253) and Katie Warpinski, a son, Joseph, June 22.

Gregory (7812) and Bernice Garcia, a daughter, Aja Nicole, July 5.

Before Yellow Tape



... "In the 1920s, practically every piece of research physics equipment in British laboratories was stuck all over with red Bank of England sealing wax because this was the best cement available for holding a vacuum. A little later, when apparatus had to be dismantled and scientists had to be able to break and regain vacuums quickly, the cement of choice became plasticine. During the golden age of experimental physics early in this century all progress seemed to depend on a band of ingenious craftsmen, with brains in their fingertips, who exploited a great many little-known properties of materials and other tricks of the trade. These tricks not only made all the difference in what could or could not be done in a laboratory; to a large extent, they determined what was discovered. The phenomenon is not confined to physics, to any particular country, or even to the present century."

Derek de Solla Price in *Natural History*

Survivor Annuity Option Demands Decision

by Ted Sherwin (Ret.)

"The hardest thing about retiring," I wrote in this column some three years ago, "is making up your mind to do it." The point was that once you've set a date and told your boss, everything begins to fall into place. A number of Sandians who have retired since then have told me the comment helped them to quit testing the water and dive in.

Of course a lot of things have to be decided in connection with retirement. One of the more worrisome decisions for married employees is what to do about the survivor annuity option. Will they elect to have their pension reduced by 10 percent so that the surviving spouse will receive 50 percent of that reduced amount after the retiree's death? Or will they take the full pension and make other arrangements for the survivor's annuity?

Under a new law, if you are married when you retire, you may decline the survivor annuity option, but only if your spouse agrees in writing. Otherwise, your annuity will automatically be reduced 10 percent. Should your spouse predecease you, you will then receive your full (unreduced) pension during your remaining years.

Neither Sandia nor Prudential has any stake in your decision, but planning may not be a do-it-yourself proposition. You may want to seek help from your attorney, accountant, tax adviser, or investment adviser. There are so many individual considerations that the final decision must be yours, based upon discussion with your spouse of all relevant factors. Some questions you and your spouse should ask yourselves might be:

- How much will my regular pension be reduced if I take the Survivor's Annuity option, and how much will we miss that money?
- Will my spouse need the continuation of my pension if I die, or do I have enough income-producing assets or life insurance to provide future financial security without the survivor pension?
- If additional protection is needed, can I provide it in a different way?
- What is the state of our health, and how will existing physical conditions affect our normal life expectancies?
- At what ages did our parents die, and what were their health histories?
- Should I consider the effect of these factors when making the decision to elect or deny the survivor annuity: current and future taxes, inflation, possibility of ad hoc pension increases (which also apply to a survivor's annuity), and the restoration to full pension if the spouse predeceases the retiree?

Some couples may decide that they will take the full pension and invest 10 percent or more of the monthly annuity in another income-producing plan that they believe will have a higher yield. Mountain Bell employees in Albuquerque are offered a plan through their credit union that enables them to buy a survivor's annuity equal to 50

percent of the *unreduced* pension, if they invest 10 percent of the full pension in the credit union plan. (The Albuquerque Bell credit union doesn't sell the plan itself but contracts with a licensed agent to handle it. Sandia's credit union has considered offering such a plan but has not done so.)

Don Harrison (3422), planning to retire soon at age 55, did an extensive study of investment opportunities that would provide alternatives to the survivor option. He concluded that, in his situation, some life insurance plans could guarantee a higher monthly income for his widow than the survivor option of Sandia's plan. In the plan he selected, he will pay a level premium that is slightly more than 10 percent of his monthly pension and obtain an investment/insurance package that has an initial death benefit of \$75,000. Thanks to the investment feature, the death benefit increases each year: in 24 years it would be about \$100,000, assuming a nine percent interest rate on the funds he will pay in.

The proceeds of the policy (as with all life insurance) would be non-taxable and, Don says, could be used to purchase an annuity that would yield more than the 50 percent option of Sandia's plan. One feature that attracted Don to the plan is that his premiums are paid up in about 10 years. Another is that, should his spouse predecease him, all of the investment portion of the package plus interest is returned to him. He will be happy to give interested employees additional information.

Many long-service employees may feel that a similar annuity could be purchased with the proceeds of their existing insurance policies, eliminating the need for additional insurance.

A booklet, "Your Pension and Your Spouse — The Joint and Survivor Dilemma," deals directly with the problem I've discussed here. The booklet was prepared by George Martorana, himself a recent retiree with 35 years' experience in employee benefits and now a pre-retirement adviser. The booklet was published by the International Foundation of Employee Benefit Plans. It is available at the Library. The booklet contains a number of work sheets that are extremely helpful in working out the various options you might wish to consider in determining which financial plan best fits your needs.

Many other booklets and pamphlets are available from insurance and investment advisers.

One bit of advice from Martorana is worth quoting here: "After you consider and understand all of the implications of the Joint and Survivor Pension and have made up your mind, don't worry. In other words, be satisfied that you've taken all reasonable precautions to protect yourself and your family. Once you've reached the deadline, your decision will be final and you'll never have a chance to change your mind — so forget about it, and enjoy your retirement to the fullest."

In Form & Informed

Do you sometimes wonder about the proper ways to exercise but just don't know whom to ask?

Well, here's your chance. As part of Sandia's pilot physical fitness program, Medical will run a question-answer service that will provide definitive answers to your fitness questions — health benefits of exercise, treatment of common injuries, training programs, whatever.

Send your questions to Susan Harris (3330). She'll pass them along to UNM exercise physiologist Laurel Traeger-Mackinnon for answers. Questions and answers of general interest (edited as necessary) will run in the LAB NEWS.

Register to Vote

The League of Women Voters will offer Bernalillo County residents a voter registration service at Sandia on Tuesday, Aug. 13, from 10 a.m. until 3:30 p.m. in Bldg. 800 (across from the Snack Bar). Because the location is outside the Tech Area, family members as well as Sandians can register. Anyone who did not vote in the last general election may have been purged from the list of eligible voters. Deadline for registering to vote in the Oct. 8 Albuquerque city election is Aug. 27. If you have any questions, call June on 4-7433.

Events Calendar

- Aug. 2 — Summerfest: Friday evening gala with Tony Brazis & Spice, 5:30-8:30 p.m.;
- Aug. 3 — Zong Qiu, a Chinese Moon Festival, 5-10 p.m.;
- Aug. 9 — KRZY Country Friday Nite w/John West & Quarter Moon, 5:30-8:30 p.m.;
- Aug. 10 — Polish Carpathian Night, 5-10 p.m.;
- Aug. 16 — Friday Evening Gala w/Talisman, 5:30-8:30 p.m., Civic Plaza, 766-7660.
- Aug. 2-4 — Arts & Crafts Show, Albuquerque Arts & Crafts Committee, Fri. & Sat. 10 a.m.-9 p.m., Sun. 10 a.m.-6 p.m.; Ag. Bldg., State Fairgrounds, free, 831-9574.
- Aug. 4 — Annual Santo Domingo Feast Day, 500 dancers, corn dance, Santo Domingo Pueblo, 465-2214.
- Aug. 9-10 — Annual San Lorenzo Feast Day: sunset dance, foot races, ceremonial pole climb, corn dance; Laguna and Picuris Pueblos; contact pueblos.
- Aug. 11 — Dance Performance, Regina School of Dance performs 1-2 p.m., Old Town Plaza, free, 842-0949.
- Aug. 12 — Annual Santa Clara Feast Day: corn, harvest, buffalo, or Comanche dances; Santa Clara Pueblo, 753-7326.
- Aug. 15-17 — Bernalillo County 4-H Fair & Rodeo: livestock, craft exhibits, rodeo each evening at 7:30; Tingley Coliseum, State Fairgrounds, 243-1386.



FIRST TIME FOR "JUST-IN-TIME" — Sarah Sharpton (3745) and Felix Almaraz (153; center) look on as General Stores' Homer McIlroy and Ray Gabaldon (both 3742) check invoices. It's April 16, and the first delivery of supplies purchased using the new "Just-in-Time" method has arrived. Also looking on (left) are Jim Beasley and Al Baca (both 3742).

Getting It Just-in-Time

New Purchasing Procedure Reduces Costs, Improves Quality

It's revolutionary. No other DOE prime contractor does business this way.

Sandians started using it April 15 to purchase office supplies. By spring 1986, almost all of the 15,000 MRO items (Maintenance, Repair and Operation — that's every ready-to-use, non-raw material item) in General Stores will be purchased using it.

It's called "Just-in-Time," and it's Sandia's brand of systems contracting, a purchasing method developed 23 years ago at Carborundum Corporation. Katherine Danforth, supervisor of Purchasing Division 3745, can already point to money saved with the new purchasing procedure.

"The prices of items purchased for General Stores on the basis of our last contracts of two years ago are higher than the prices of comparable items purchased under the new system," says Kay. "Looking at office supplies only, we pay 13 percent less now than we did two years ago. That figure doesn't include still more money and time that will be saved by not having to stock and inventory the supplies we purchase."

The systems contracting idea is simple. Sandians who use items can choose items — exactly what they want when they want it. Requisition orders go through General Stores directly to a local supplier.

"The new system does more for us than just save money," says Rob Banwart, Systems Analyst in Administrative Policies and Procedures Division 132. Rob led a task force organized in March 1984 to design the new purchasing system.

"Systems contracting turns the job of buying and inventorying MRO stock over to local suppliers who are experts in the field," says Rob. "They're on top of the market. They have to supply the highest quality items at the best prices to keep their contracts and make their profit. Better supplies at reduced cost with more timely deliveries — that is, literally in this case, the bottom line."

The task force proposed the "Just-in-Time" approach last fall. The new procedure was approved. On March 14, Strong's Office Furniture and Supply Company of Albuquerque was awarded the first systems contract. The first delivery was made on April 16 (see photo).

"Office supplies are the perfect test case," says Ed Kozlowski, a buyer in Division 3745. "Everyone uses them in significant quantities, but they're not absolutely critical. We can solve any problems with the new system now, throughout the

Labs, without risking severe disruption in the Labs' work."

There have been few problems. A survey of Sandians who placed orders and received deliveries during the first week of the new system's use turned up positive responses.

- 90 percent of respondents found the new ordering instructions clear.

- 30 percent found placing an order harder with the new system, 17 percent found it easier, and the rest found no change.

- 100 percent were pleased with the quality of the items they received.

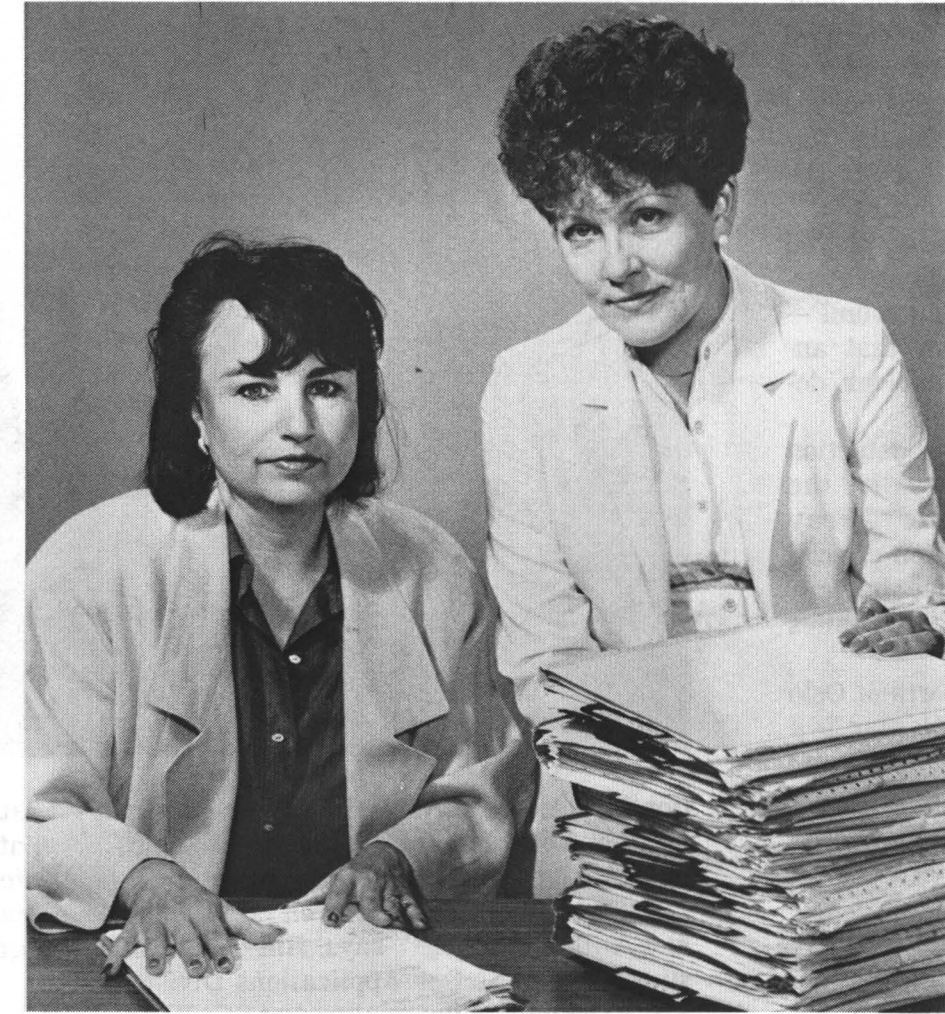
- 89 percent rated Strong's catalog of office supplies "better" or "much better" than the General Stores catalog. Nine percent rated the two catalogs equal. Only two percent (one respondent) preferred the General Stores catalog.

Sandians' preference for the new catalog with its attractive display of items has caused a buying surge in office supplies.

"It's like Christmas out there now," says Sarah Sharpton, a buyer in Division 3745. "But we expected that. The initial enthusiasm is natural. It's actually part of the savings mechanism of systems contracting."

"People will try new items, find what works best for them, and adjust their buying to reflect their needs. This eliminates obsolescence — buying and storing materials our users no longer really need — and increases the efficiency of our purchasing. Even with the initial buying surge, overall consumption will decrease significantly by the end of the year."

Sandia's "Just-in-Time" systems contracting model is being studied by Allied Corporation, Bendix/Kansas City.



WHICH PILE WOULD YOU RATHER FILE? Kay Danforth, Supervisor of Purchasing Division 3745, holds the contract with Strong's Office Supply that, under the new "Just-in-Time" purchasing procedure, has replaced the contracts piled up in front of Sarah Sharpton, a buyer in Division 3745.

"Bendix has 32,000 MRO items to purchase. That's more than twice the size of our MRO list," adds Kay. "Their interest in our approach reflects the positive experiences of the large concerns who use systems contracting — such as Honeywell or, locally, PNM."

It made sense in 1949 to supply the newly organized Sandia Corporation through its own General Stores stocked with items purchased on contracts negotiated individually

with suppliers thousands of miles away. Albuquerque had fewer than 100,000 residents then, and the city's ability to supply a major R&D facility was severely limited.

But Albuquerque is four times larger now and an important supply center for the burgeoning Sunbelt. With "Just-in-Time," Sandia will do more of its business closer to home, saving time, saving money, improving quality, and helping the community in which Sandians live.

Of The One Over The Many

Problems with Purchasing Past

When Strong's agreed to become Sandia's sole purveyor of office supplies, it became the first systems contractor in the new "Just-in-Time" purchasing plan (see related story).

The single contract signed with Strong's supersedes 21 separate, annual contracts that, under the previous purchasing system, were required to keep Sandians' desks replete with paper clips, pens, pencils, and paper.

Potential problems with purchasing that should be solved by the new systems contracting approach add up to more than simply recognizing the advantages of the one over the many.

Some of the paperwork in those 21 contracts may harken back to days of yore when an item such as a yellow, quadrille-ruled pad of paper was not easily procured west of the Mississippi and east of greater downtown Burbank.

Back then, Sandia had to write up a formal specification describing the quadrille-ruled paper it most desired, and then seek bidders who would agree to

provide it, even if they had to manufacture it to meet Sandia's specifications.

Sandia's years-old spec for quadrille-lined paper called for 50-sheet pads — then the industry standard. Somewhere over the years the industry standard changed to 100-sheet pads.

But Sandia's specification still called for 50. For a while, 50-sheet pads were purchased and stocked — manufactured specially for Sandia at a price equal to the fare for 100-sheet pads.

That problem was caught quickly and corrected. Systems contracting promises to prevent such problems from happening again.

The burden of providing Sandia with industry-standard, quality items now rests on the supplier — it's stipulated in the contract. A "value analysis" clause sets the goal of a three per cent savings, per year per commodity, across the board.

That, plus competitive bidding for contracts, ensures full pads of paper for the future.

Fun & Games

Golf — Leon Chapman (6432) was the low gross winner, A flight, of the recent SGA Open played at UNM South and Ladera courses. Charlie Carter (7472) was the low net winner, A flight. Other flight winners (low gross listed first, then low net) were Emery Chavez (155) and Bill Brooks (1221), B flight; Dan Buller (1111) and Jim Salas (2514), C flight.

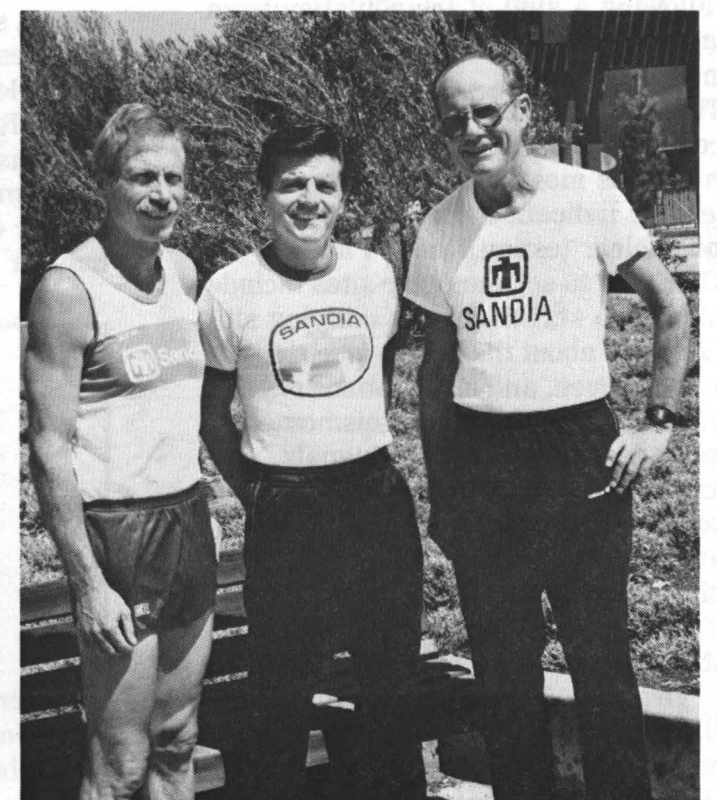
Biking — Aug. 17-18 are the dates of the 1985 East Mountain Bike Classic. Three competitions are planned — a race up Sandia Crest, a 4.5 mile loop race on Zamora Road (old Route 66) to Zuzax Road and back, and a criterion event. Some \$2000 in prizes are offered. Sponsored by the East Mountain Chamber of Commerce, the event is expected to attract about 200 participants. Register at local bike shops. For ad-

ditional information, call Marguerite Kaminski, 281-5328.

Soccer — The Rio Grande '74 girls' soccer team seeks additional experienced players for the upcoming season. The team plays in the Duke City League. Girls born in 1974 who would like to try out for the team should call Pete Asprey (2821), 296-6673.



UP FOR THE CUP — Sandians represented approximately 20 percent of the 1985 AT&T National Corporate Cup team — not bad since Sandians make up only two percent of all AT&T employees. In a very tight race with the General Electric team for first place honors, the AT&T competitors won on what amounts to a technicality: with the score tied at 741 each, AT&T won because its members qualified in every event; GE missed one. Above left are (front row, from left) Mary McWhorter Walker (1636), 200m and 400m; Becky Hunter (1500), 25-29 5k and 10k; Tina Tanaka (7112), sub-master 200m; Lynn Cole (3545), 400m; and Kathie Hiebert-Dodd (315), 30-34 5k and 10k; (back row) Richard Cernosek (7555), shot put; Kay Schoenfeld (6425), sub-master 200m and 400m; Larry Walker (5322), executive 400m, sub-master 800m; Craig Walker



(3423), sub-master 200m; John Kelly (6454) high jump, long jump; Tony Teague (3435), 200m; and Henry Dodd (6252), regional corporate cup coordinator. Above right are Jim Schirber (1150), 50-54 5k; Jim Reitz (8176), 40-44 5k; and Morey Reynolds (8161), 55+ 10k. Not shown are Mark Kimball (2112), 400m, 800m, and 1600m; and John Otts (6222), shot put. Mary was on the winning women's relay team, and John Kelly was on the winning jump team. Others who finished in the running were Mark, Larry, Tina, Kay, Richard, and John Otts (the latter two were the AT&T field team). More than 30 large corporations sent teams to the National Corporate Cup competition at UCLA's Drake Stadium July 27-28.

Norwegian Array Improves Seismic Monitoring

A hundred years ago pioneers put their ears to the ground and listened for muffled sounds that might signal the approach of mounted adversaries, their horses' hooves pounding an early warning into the flat prairies. Today, "keep your ear to the ground" means be cautious, be aware.

Since the 1960s, Sandians have played important roles in U.S. efforts to keep ever-keener technological ears to the ground — listening for seismic signatures that announce underground tests of nuclear devices (LAB NEWS, April 13, 1984).

Sandia's latest contribution to detection and identification technology is the Norwegian Regional Seismic Array (NORESS), a unique configuration of seismometers arranged in four concentric circles measuring just less than two miles across.

NORESS, located 60 miles north of Oslo in a pine forest near the town of Hamar, is a cooperative effort of the Norwegian and U.S. governments. Its purpose is to better define the smallest yields from underground nuclear tests that can be detected with current technology.

"We developed the array concept from our on-going evaluation of the National Seismic Station program," says Paul Stokes, manager of Systems Research Department 310. "Single element seismic observatories like the NSS can detect weak signals, but they aren't that effective for pin-pointing the precise location of an event.

For specific detection and discrimination goals, NORESS is much better than previous stations. The key is NORESS's tight array of seismometers in concentric circles. Seismic signals arrive at each seismometer site at slightly different times, thus allowing a kind of triangulation from the data. The result is an accurate fix on the origin of the signals.

"The array allows us to 'tune in' on the source of high-frequency seismic waves, which are the most difficult to suppress of the seismic indicators produced by underground nuclear testing," adds Paul.

NORESS's 25 seismometer sites include a central hub station and 24 outlying stations arrayed about the hub in four rings of three, five, seven, and nine stations respectively. The hub contains two seismometers and provides power, timing signals, and calibration commands to the outlying sites. It also receives, processes, and transmits all data.

Using a two-hop satellite transmission, NORESS transmits data via an Intelsat Atlantic satellite to a receiving station in West Virginia. From there, a second satellite retransmits NORESS data to the Center for Seismic Studies (sponsored by DARPA — The Defense Advanced Research Projects Agency), Sandia's System Control and Receiving Station (SCARS), and LLNL.

DOE's Office of International Security Affairs funded development of the NORESS project, and DARPA funded installation and communications. Sandia designed, developed, and deployed the array's instrumentation, electronics, and communica-



ON TOP OF THE NORESS HUB a dish antenna transmits data from the array of 24 outlying sites that ring the central station. Beneath the hub, two 60-metre deep holes hold the hub's seismometers, complete with electronics packages that amplify seismometer outputs, digitize the signals, then authenticate and transmit data.

tions systems. (LLNL assisted in the design of the seismometer layout and helps evaluate NORESS data.)

"The system was deployed on schedule and within budget," says Bill Goldrick, supervisor of Sensor Applications Division 323. "The data being analyzed at SCARS indicate that NORESS is a top-quality system."

The relatively unobtrusive design, almost completely automatic operation, and ability to continuously transmit reliable data that can be authenticated to ensure its validity make NORESS a model for monitoring stations that may be required in the future.

"NORESS provides a unique opportunity to develop experience with a monitoring system that combines excellent state-of-the-art sensing subsystems with the unique features required for mutual acceptability in world-wide arms control applications," says Roger Hagengruber, director of Systems Studies 300.

Seismic monitoring systems for nuclear testing date back to the beginnings of the nuclear weapons program. Seismic mea-

surements were made of all early atmospheric tests. They became essential for defining the limits of verification when nuclear testing was restricted to underground sites by treaty in the early 60s.

With NORESS, Sandians are helping to test seismic detection and discrimination limits and to develop prototypes of these specialized systems that may, someday, facilitate future arms control agreements.

Hair Analysis — Questionable



... "Hair analysis is worthless for detecting vitamin deficiencies and of very limited value for estimating the mineral status of the body, including trace element deficiencies," says K. Michael Hambidge, a pediatrician at U. Colorado Health Sciences Ctr. in Denver. Although the chemical analysis of hair for mineral elements has some potential value in human medicine and nutrition, its utility on an individual basis is extremely limited at present due to problems in methodology and data interpretation, according to Hambidge. Various laboratories attempt through hair analysis to determine trace element deficiencies, estimate body levels of the major nutrient minerals and toxic heavy metals, and screen for various diseases. Some of these laboratories advertise directly to the public. Others have customers referred to them by health food stores, beauty shops, and some health professionals. Depending on the laboratory and the chemicals to be studied, the cost of an analysis varies from \$15 to \$90."

in Research Resources Reporter



Here are some current volunteer opportunities for employees, retirees, and family members. If you would like more information, call Karen Shane (4-3268).

MEALS' ON WHEELS, a non-profit organization that provides a hot noon meal for the aged, convalescent, or handicapped is looking for volunteers in two areas: drivers are needed to deliver weekday noon meals from Presbyterian, Northside, Heights General, Lovelace, Kaseman, St. Joseph, and St. Joseph West. Assignments

are for 1½ to 2 hours one day a week. Also, hospital day chairmen (who coordinate and schedule) are needed on Wednesdays during the remainder of the summer at Heights General and permanently on Tuesdays at Heights General and Northside.

AMERICAN DIABETES ASSOCIATION, ALBUQUERQUE VISITING NURSING SERVICE, and CATHOLIC SOCIAL SERVICES are seeking volunteers with office skills.

Take Note

Gene Rogers is a handicapped graduate student who needs someone to design and fabricate a hand-controlled system so that he can drive his car. If you're interested in such a challenge, call Bob Gough (311) on 6-2539; or call Gene at 266-2464.

* * *

The Albuquerque Cancer Support Coalition is sponsoring "Breaking the Silence: People, Cancer and Emotions," a day-long conference designed to bring cancer patients, their family members and friends, and medical and health care professionals together to discuss issues involved in living with cancer.

The workshop will be held Sept. 7 from 8:30 until 3:45 p.m. at the Central United Methodist Church in Albuquerque. Fitzhugh Mullen, MD, secretary of the NM Health and Environment Department, will deliver the keynote address. Eight small-group workshops will be led by physicians, health professionals, counselors, patients, and family members.

The conference is open to the general public at no charge. For more information and to register for the conference, call the American Cancer Society at 262-2333.

* * *

Interested in volunteer work at the Museum of Natural History? An orientation session, conducted by Jeffry Gottfried, Chief of Education and Public Programs, is scheduled at 6:30 p.m., Aug. 14, in the multipurpose room of the Museum, 1801 Mountain Road NW. (Free parking is available in the lot immediately north of the building.)

One of the major volunteer activities is the Museum's docent program. The docents' primary task is to provide personalized education and, accordingly, must be knowledgeable about the exhibits and skilled in responding to visitors' interests. As part of their preparation, prospective docents learn techniques of working with the public and presenting educational material. The core of the comprehensive training program is a 36-hour initial course on New Mexico's natural history, based on the Museum's exhibits. Training sessions will continue as the Museum expands its exhibit program. A variety of reading material on natural science topics complements the material covered in class. For additional background, participants attend lectures, films, and field trips conducted by Museum curators and other outside experts.

Anyone may take the training course. Individuals interested in becoming a docent can find out more about the activities and aims of the program at the orientation session. For additional information, call Jeffry Gottfried at the Museum (841-8840).

* * *

The National Atomic Museum's next lobby exhibit opens Aug. 6. "Decision To Drop the Bombs" will chronicle the events and portray the personalities involved in the decision that led to the dropping of the bombs on Hiroshima and Nagasaki. Included in the exhibit are artifacts from the Manhattan Project and World War II.

A panel discussion featuring McAllister Hull, Jr., Provost and professor of physics at UNM and a Manhattan Project member, and Michael Welsh, professor of History at UNM and author of a book entitled *Mission In the Desert*, will be held at 10 a.m., Aug. 6, in the theater at the Museum. Hull will discuss how the lower echelons felt about dropping the bomb. Welsh will discuss the political and foreign policy aspects of the decision. In conjunction with the activities on Aug. 6, films of the subject will be shown in the Museum theater. These films will be shown throughout the month of August. For more information call 844-8443.

* * *

Transferred out of state? If you were a customer of Gas Company of New Mexico between July 1976 and April 1984, chances are you have some money coming to you.

Six years ago, an antitrust lawsuit was filed against five natural gas producing companies resulting in settlements totalling \$75,000,000. These settlement funds are now being distributed under the direction of the U.S. District Court to people who were residential customers of New Mexico's largest gas utility at any time between July 1976 and April 1984.

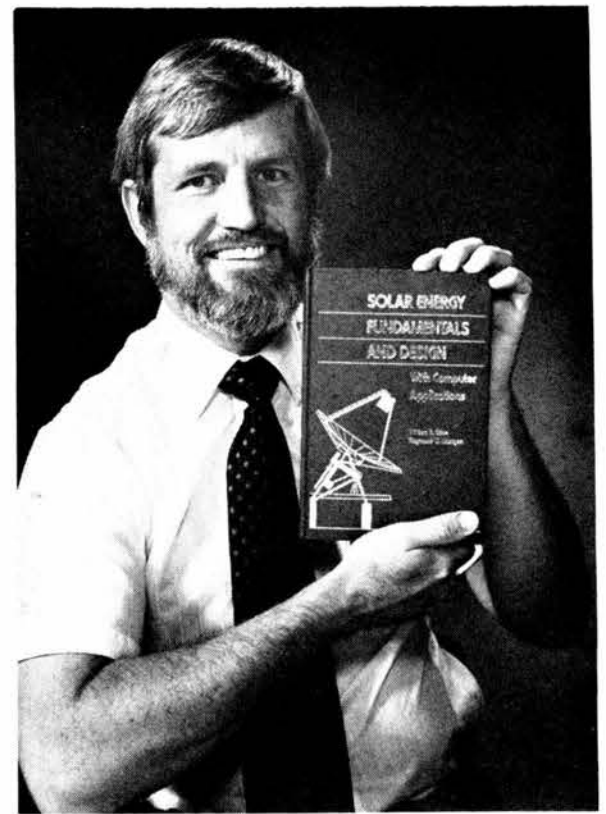
If you are a former customer, find out about your eligibility to receive part of the settlement by calling the Distribution Project's toll free numbers in Albuquerque - 266-8751; elsewhere in New Mexico - (800) 824-2894; outside New Mexico - (800) 245-1765.

* * *

An exhibit of genigraphics (computer-generated graphics) is on display in Bldg. 822. Tom Salazar and Denise Archuleta (both 3155-1) did the work, which includes an integrated circuit, a rocket in reentry, a crystal formation, and a mechanical illustration. The graphics are generated by a computer, then transferred to a floppy disc and, finally, transferred to computer cameras that have been programmed to transfer work onto slides, negative color prints, or vugraphs. In this exhibit, the negative color prints were enlarged; the results are presentation-ready artwork. The exhibit was arranged by Joe Laval (3163).

* * *

Engineers and others of a technical bent who have a yen for money and an idea for putting the two traits together will be interested in "Entrepreneurial Engineering," a semester-long class to be taught by Professor Bill Gross at UNM on Thursday nights from 6:30 to 9:30 starting August 29. Class members will learn to recognize entrepreneurial opportunities, evaluate them, and manage their growth. Entrepreneurial businesses developed in the course are chosen from ideas proposed by class members. If you've got how-to talent, learn to turn it into a business. Proto-entrepreneurs should register for the class at UNM's Mesa Vista Hall, Monday through Friday



RAY HARRIGAN (6228) is the co-author of a recently published book, *Solar Energy Fundamentals and Design with Computer Applications*, with William Stine (California State Polytechnic University, Pomona), who spent the summers of 1980-81 under a DOE fellowship working at Sandia on solar energy projects. Published by John Wiley and Sons as part of their alternative energy series, the book is written from an engineering point of view. It tells how to design solar systems using parabolic troughs, central receivers, and flat plate collectors for process heat and electrical power generation. Many Sandia projects are described and used as references. The book contains listings and tables with computer codes that would enable an engineer to design solar systems.

from 9 to 5. For more information, call Professor Gross at his office, 277-6297.

* * *

Las Mujeres de LULAC will sponsor a "Hispanic Women's Motivation and Image Conference," Saturday, Aug. 17, at the Convention Center. Las Mujeres is a Hispanic women's organization whose members are primarily concerned with educational and economic issues. For more information, contact Mary Molina Mescall (3511) on 4-9481.

* * *

Anyone who has ever studied a foreign language knows that you either use it or lose it. Two groups of Sandians get together once a week for lunch to practice their conversation skills. A Russian-speaking group meets on Thursdays on the parade grounds. For more information call either Lee Bertram (2747) on 4-4077 or Patricia Newman (3144) on 4-2395. A French conversational group meets Fridays at the 861 Cafeteria. Call either Berweida Learson (3522) on 4-6913 or Phil Thacher (7242) on 4-3177.

* * *

Retiring this month and not shown in LAB NEWS photos are Virgil Bailey (2312), Albert Cherino (3436), Paul Jones (7484), George Kinoshita (7263), and Bob Garcia (3500).

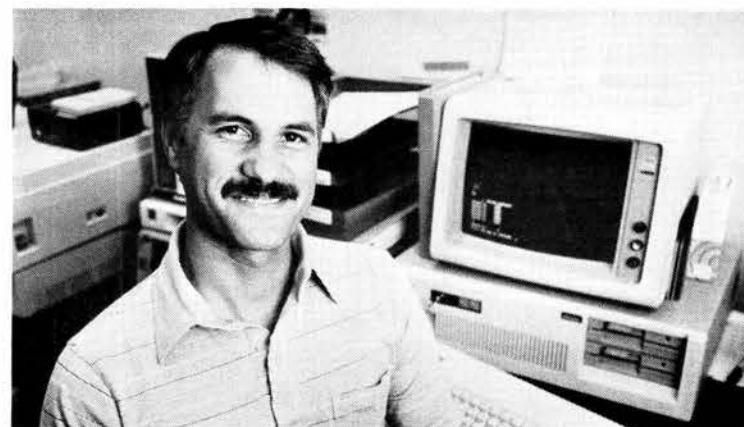
MILEPOSTS

LAB NEWS

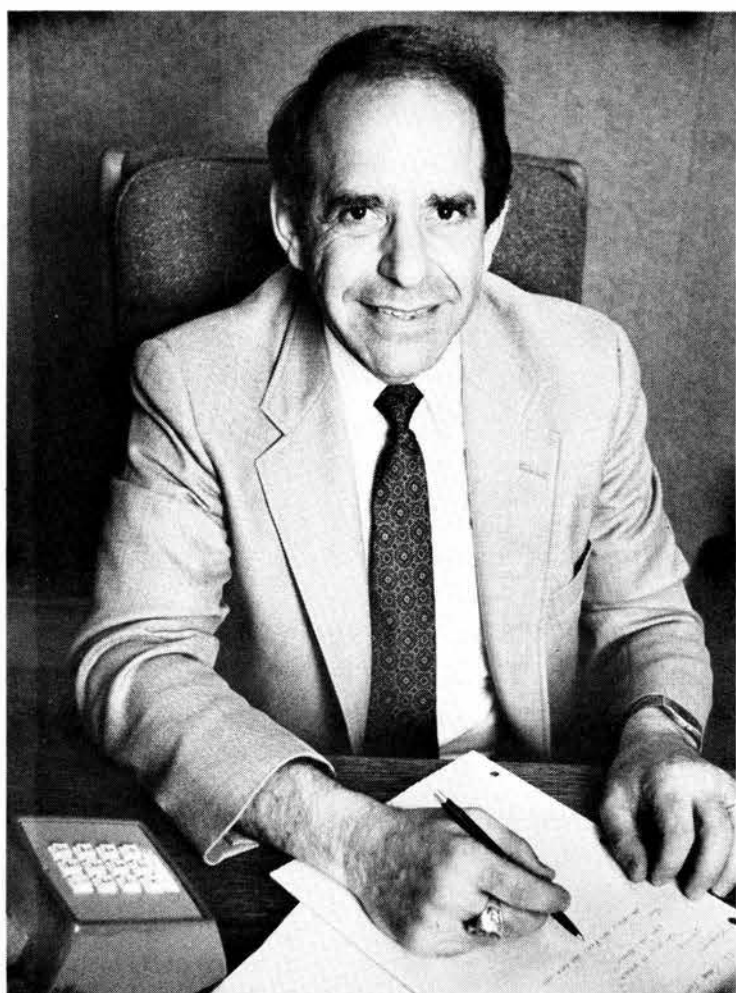
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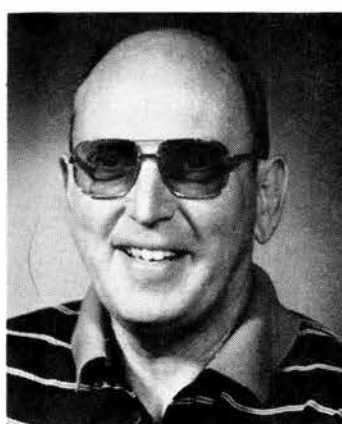
Robert Luna (6321) 20



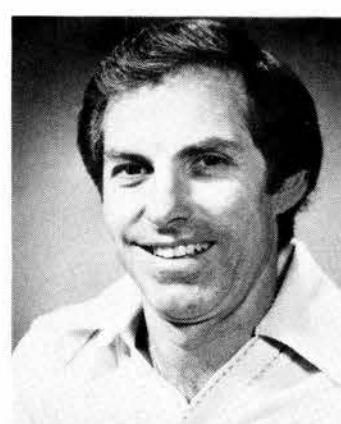
Mike Heiser (2613) 15



Ben Bader (400) 30



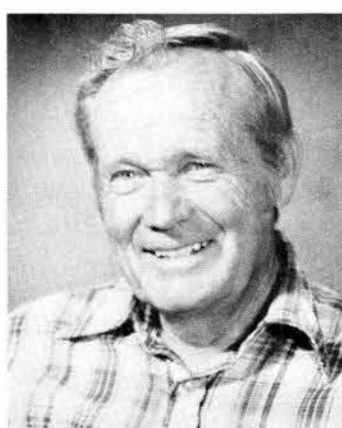
Owen Berg (5173) 25



Tom Plummer (7842) 20



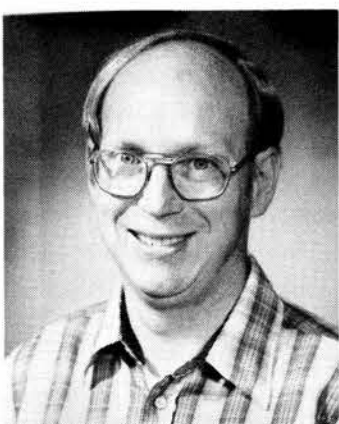
Doyle Morgan (2561) 25



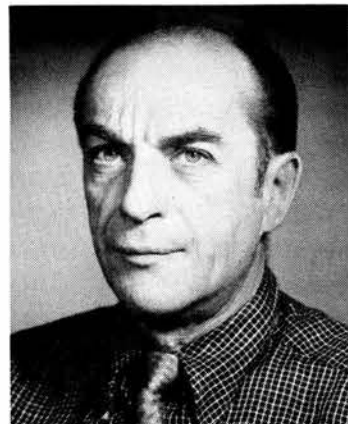
Marvin Ozmun (2853) 35



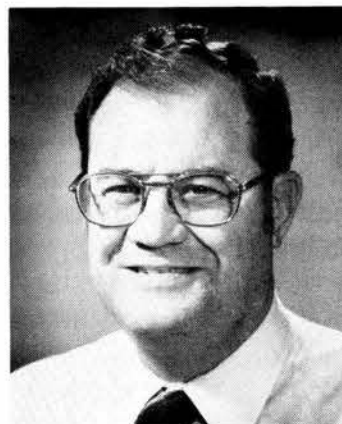
Don Anderson (7172) 25



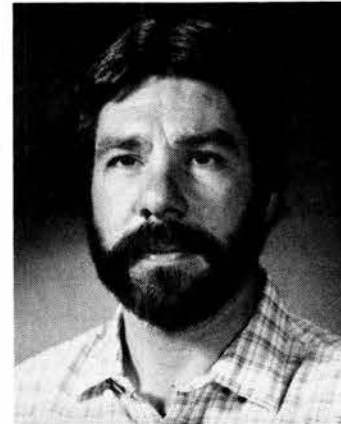
Paul McKay (1244) 15



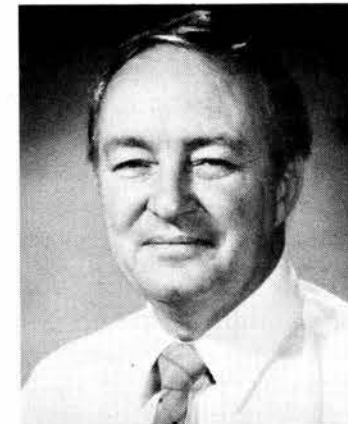
John Simchock (2851) 25



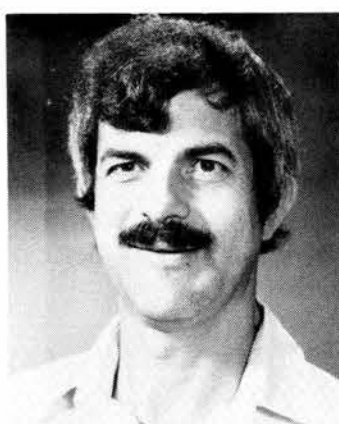
Jon Barnette (2545) 25



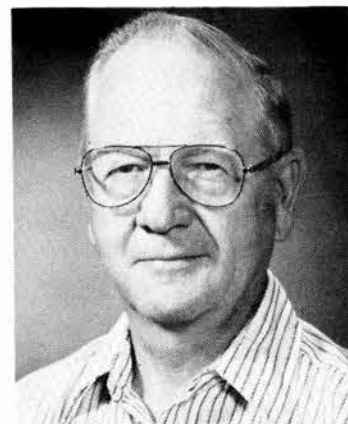
John Lavasek (5216) 15



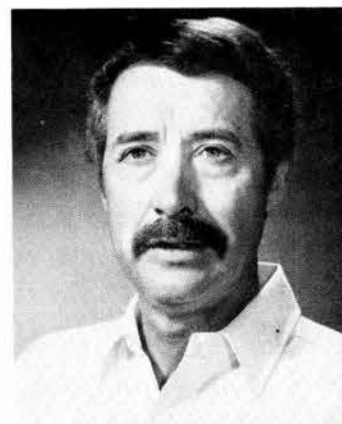
Ken Paul (3552) 25



Paul Beck (5311) 20



Lloyd Barnes (5122) 35



Oscar Oren (331) 25



Ed Dale (132) 15

Powerful Genie



"Although early jokes about controlled fusion reactions included, 'It's absolutely safe: we don't do it at all,' the question of safety rises once again as 'doing it' gets closer of reality.

Public perception of the problems in producing nuclear fission may well slop over into nuclear fusion. One way of visualizing the problems of nuclear fission in which atoms are split is to im-

agine a powerful genie corked inside a bottle. The job of the engineers is to use the genie's strength without letting it out of the bottle. In nuclear fusion where atoms are joined, or fused together, the genie, if left to its own devices, is a very weak one. In one sense the real engineering problem is to coax the genie into working at all. And, if in some way the magnetic bottle is smashed, fusion can't take place. There are no problems of 'meltdown.' If the plasma begins to burn out of control,

it will attract impurities from the wall of the torus vessel — and put itself out. Terrorists won't be interested in stealing fuel from the fusion plant of 2020, either; before tritium could be used to produce a nuclear weapon, the producer would have to have such high technology that he could make his own."

Henry Holtzman & Megan Beaumont in
Corporate Monthly

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5. Use separate sheet for each ad category.
6. Type or print ads legibly; use only accepted abbreviations.
7. One ad per issue per category.
8. No more than two insertions of same ad.
9. No "For Rent" ads except for employees on temporary assignments.
10. No commercial ads.
11. For active and retired Sandians and DOE employees only.
12. Housing listed for sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

MAINTENANCE manual, 1981 K car Plymouth Reliant, Dodge Aries. Rainhart, 821-3690.

HAM rig, FT-101Zd, 160-10 mtrs w/filters, \$425. Frenkel, 299-3258.

STEREO speakers, 1 pair ADC303AX, 2-way, 10 in. driver, walnut enclosure, 24" x 13" x 12", \$100. Pike, 299-6153.

MOVING Sale, Sat. & Sun., Aug. 3 & 4. 7609 Morrow Rd., NE, near Pennsylvania & Indian School Rd. Harrison.

ROWING machine — electric, paid \$400, will sell for \$295. Barr, 821-5870.

VIVITAR instamatic camera w/telephoto/electronic flash, \$20; GE stereo turntable/AM-FM/speakers, \$25; wrought iron/upholstered chairs 3/\$40. Siegrist, 299-3088.

PRINCE Pro tennis racquet w/cover, nylon strings, \$60; 15 unopened cans of various brand name tennis balls, \$1.50 per can or \$20 for all. Smith, 299-6873.

SPAULDING First Flight irons, 2 to sand wedge, \$135. Zownir, 256-3753.

FOUR universal mount Rocket mag wheels, \$200; antique china cabinet, \$350; antique night stand w/marble top, \$100. Rockwell, 884-4206.

FOUR steel, 8 lug, 16" rims w/tires (about 14,500 mi.) for Ford pick-up, \$200. Potter, 892-8812.

PINBALL machine, Williams "Swinger," two player, DC action, \$250; turntable, Ariston RD II S w/Grace 840 tonearm, Signet TK7E MKII cartridge, \$350. Harrell, 296-4927.

EXERCYCLE, adjustable. Norris, 299-4717.

SOFA sleeper w/chair, earthtones upholstery, w/coffee table, \$250; new end and coffee table, dark oak, \$110. Molina, 299-8718.

TUNEUP equipment, Dwell-tach meter and Xenon timing light, new \$33, sell \$20; compression tester, remote starter switch. Schkade, 292-5126.

WEDDING dress, head dress, veil, lace, size 7 or 8, off white. Pickard, 296-1773.

FOOSBALL TABLE, Dynamo home unit, \$175, OBO. Gwinn, 299-7167.

DAYBED, \$65; screen door, \$5; electric broom, \$10; recliner, \$10; adding machine, \$10. McFadden, 293-7177.

REAR axle from Cushman three-wheel unit complete with tires. Gomez, 293-8377.

CAMPING trailer, Aristocrat, 19 1/2 ft. 73. Chavez, 242-6078.

SEARS Best ping pong table, 2 sets of paddles & 2 nets, \$50; maple youth bed, \$30. Gleason, 836-5612.

CAMP Coast to Coast/Enchanted Trails membership, \$500 below current price. Patton, 298-9987.

SUN Tachometer, never used; 25-25 pair telephone cable; assorted electrical wire. Mozley, 884-3453.

MEMBERSHIP in Roadrunner Flying Club, Cherokee 180, 1FR equipped, based at Albuquerque International Airport. Beck, 299-7225.

B&W 27" TV, \$20 OBO; large antique 3-drawer dresser, \$100 OBO. Benson, 266-5031.

WEIGHT lifting set, with or without bench, for young adult. O'Bryant, 268-9049.

SLEEPER sofa w/matching love seat, uncut velvet in earth tones, \$500; 2 upholstered bar stools, \$75; Taos style coffee table w/2 end tables, \$100; OBO on all items. Ahr, 883-9752.

SORRELL gelding, 15.5 hands, experienced rider. Riley, 869-2119.

3-RAIL registered motorcycle trailer w/lights & big metal tool box, 15" tires and wheels, \$200 firm. Baca, 265-2881.

CHAMPION juicer, \$80; harrow and disc for Sears garden tractor, \$50 each OBO. Branagan, 344-2019.

CANON camera FT-QL, 35, 80, 200mm lenses, \$250; dark room complete, Nikon, Durst, gralab, \$225; aquarium, 15 gal., \$30. Ginn, 883-0004.

APPROXIMATELY 100 concrete blocks; you haul. Hayes, 281-9282.

TRUCK rims, Ford & Chevy tires, 2 ea. 195-70, HR-14, \$10 for both; cast-iron lavatory, \$10; clotheslines, \$15. Padilla, 877-2116.

LARGE one-horse trailer, oak floor, tack compartment, \$475. Nichols, 296-8259.

HOT TUB, 300-gal., seats 5, 1 yr. old, \$2K. Eley, 296-3185.

ORGAN, Baldwin Fantasia, Model 230R, cost \$3800, sell \$2200, extras. Arnold, 898-6012.

AUTOMOBILE air conditioner, all components, \$50. Guttman, 243-6393.

DOBERMAN, red/tan, 5 males, 1 female, parents on premises, 5 wks. old. Kaiser, 243-7579.

'83 KOMFORT 40' travel trailer, tip-out, dual A/C, W/D hook-up, storm windows, levelor blinds, rollout awning. Daut, 255-2529.

CHILD'S swing set w/slides, lg., HD, \$50. Adams, 881-4351.

TABLECLOTHS: 72 x 90 sheer all-over embroidered, \$40; 3 pure linen damask: 70 x 86, \$85, 68 x 68, \$50, 68 x 70, \$50; Mexican/hand drawn lace, \$28, all solid white. Hodgden, 883-4752.

SET of 4 steel radial tires, 185/70/13, \$10 ea. Gorney, 821-9623.

BASKETBALL goal, backboard & mounting hardware, \$10. Alvis, 298-3906.

CELLO, full size w/soft case, \$200. Neidig, 296-6727.

GERMAN SHEPHERD free to good home, 3 yrs. old, spayed, has all shots. Dodrill, 293-5464.

GARAGE sale, three-family: Aug. 10-11, 9 a.m.-5 p.m.: furniture, clothes, misc. items. 3441 Tahoe St. NE (Holiday Park). Purcell.

SIX truck tires & rims, 6.50 x 16, 6-ply, \$150; Sealy mattress, queen, \$50. Comiskey, 294-6577.

3" double bed size foam mattress covered w/vinyl, \$35. Stoeber, 296-3717.

USED Sears 24" built-in elec. oven, stainless steel door & racks, porcelain broiler pan, \$50. Aeschliman, 281-1227.

TWO 14 x 8 Ford appliance rims, \$20 each; sunroof, 15 x 30, \$50;

4" x 10" I beam, \$20. Wilson, 299-1480.

FREE to good home, female black and white rabbit, 2 yrs. old. Widenhoefer, 298-2510.

GRAVEL, landscape, 1 1/2", 4 to 8 cu. ft., free to anyone who will come and pick it up. Ezell, 821-1768.

TRUMPET, Bundy, \$175, purchased new, used 1 yr. Knapp, 294-6359.

WESTERN saddle, adult, \$100. Brainard, P.O. Box 14397, City, 87191.

REFRIGERATOR, Kelvinator, 20 cu. ft., \$125. Pate, 293-5393.

ARM chair, tan vinyl, \$60. Esterly, 296-9759.

TRAILER stabilizing stands; car mirrors; fender mount; ottoman; elec. floor fan; tripod; stereo console; Chev. steel rims. French, 293-3451.

KENWOOD receiver, Pioneer turntable, 2 floor speakers \$175. Campbell, 296-5792.

ZENITH 25" color TV, \$70; Coronado Mission couch, \$40. Carson, 251-5115.

TRANSPORTATION

STERNCRRAFT boat, 22', 160 HP, I/O, new full canvas, tandem trailer. Patton, 298-9987.

22.9 FT. cabin cruiser w/trailer, 70 Reivell, \$6000. Beall, 869-2939.

'83 VOLVO-GL, 6 cyl. diesel, 4-dr. sedan, 4-spd. OD, sunroof, AC, AM-FM stereo, power locks/windows. Bertram, 345-2103.

'73 NEW YORKER, full power. Kind-schi, 256-0531.

'83 SUN RUNNER 16' I/O, less than 20 hour total time; 2.5 Liter Chevy II motor, 120 HP; deep V hull w/walk-through windshield; some accessories included, \$8500 OBO. Downie, 293-1039.

'75 CAMARO 350 AT, PS, PB, Holley Edelbrock, competition cam headers, dual exhaust, custom interior, \$3200. Cordova, 884-9267.

'65 MUSTANG, factory air, factory mags, 29K miles, \$6500. Durnell, 255-8283.

'80 PINTO hatchback, 35K miles, AC, AM radio, manual transmission, \$2250. Kavet, 299-1793.

'75 MG MIDGET, tonneau covers, new convertible top, make offer. Stichman, 293-6096.

'81 KAWASAKI KZ550LTD, Blue Book, \$1300; consider trade for car or truck, 12K miles, \$1000. Gonzales, 294-2060.

'76 CHEVROLET Chevette, 48K miles, new battery, \$1395; '76 Honda Civic, 69K miles, semi-auto., \$950. Traylor, 292-6906.

'65 JEEP CJ-5, 4-cyl., rebuilt engine, \$1600 OBO. Ortiz, 265-7257.

'80 CAMARO, V6, AT, PS, new tires & paint, \$3800 firm. Potter, 892-1734, after 5.

'84 HONDA Magna V-4-5, \$2400 Grasser, 292-3799 or 291-0947 after 6.

BICYCLES — matching racing 10 spds., 22 lbs., matching 19 1/2" & 22 1/2" frames, \$170 each or \$300 both. Ginn, 883-0004.

BERTIN C-35 touring bike, 60 cm., blue, frame super Vitus tubing, front forks Vitus tubing, Cinelli bars w/padded grips, \$375 OBO. Perry, 266-9698.

'76 VW RABBIT, 2-dr., \$1200 OBO. Fenstermacher, 298-9050.

'67 HONDA Superhawk, 305 cc., complete restoration 2 years ago, approx. 9K miles, \$675. Daniels, 266-0402.

'68 RAMBLER American, new tires, \$300 or reasonable offer. Davis, 281-2183.

'72 TRIUMPH, Daytona 500cc., 8500 miles, \$1180. Salmen, 266-0402.

BICYCLE, 23", 10 spd., Chimano derailers, \$50. Bishop, 836-6219.

'81 KAWASAKI KZ440LTD, 8.8K miles, \$1000; '76 Opel (Isuzu) Deluxe Coupe, 83K miles, \$1500. Abeyta, 299-0892.

'83 HONDA 650 Nighthawk, low mileage, extras, \$1350 OBO. Eley, 296-3185.

'73 FORD Ranger pickup, 1/2 ton, 4-spd. Otero, 243-3638.

SR ALPINE Sport 12-spd. bicycle, 27" frame, alloy hubs, cranks, pedals, handlebars, \$150 OBO. Schlavin, 299-6592.

'69 MUSTANG coupe, AT, PB, PS, 40K on rebuilt 302 engine, \$2200. Blossom, 299-6709.

'79 CHRYSLER Cordoba, sun roof, power seats, AC, PS, \$2400. Hardin, 293-5679.

BIANCHI bicycle, 23" frame, 12-spd., \$250. Stavig, 291-9043.

'77 STARCRAFT Galaxy 8, \$2500; potted Sago Palm, free. Dupree, 294-1835.

'80 CHEV. 3/4-ton pickup Silverado, 454/V8, AT, AC, dual tanks, new tires, low miles, shell, reg. gas, \$6950, trades? Brown, 884-6848.

'83 MERCURY Marquis wgn., loaded, Brougham pkg. trim, 40K miles, \$7500. Dotson, 877-8547.

'53 FORD 1/2-ton pickup, restorable or parts truck, \$150. Wright, 296-3850.

'82 MAZDA RX7GS, AC, AM/FM stereo, sunroof, ski rack, 33K miles, \$8500. Chao, 292-0163.

'74 CAPRI, V6, 4-spd., 62K miles, AM/FM, new brakes & shocks, recent tune-up, \$1200 OBO. Bott, 298-4903.

'74 SUZUKI TC185 trail & street, dual range trans., \$500. Adams, 881-4351.

FORD Econoline 200 camper van, 302 V8, pop-top, refrig., furnace, porta-potti, 10-gal. water supply, cook-top. Warden, 1-465-2436.

'73 CHEV. C-10 pickup, SWB, 6-cyl., 4-spd., insulated shell, chrome wheels, radials, \$2K. Wilde, 298-5359.

'76 HONDA CB360 motorcycle, 11K miles, w/helmet, \$400. Purcell, 296-4986.

'69 IH, 61K miles, PS, PB, AT, AC, dual tanks, w/8 1/2' cabover camper, refrig., stove, toilet, furnace, \$1595. Shea, 897-1683.

'73 CHEV Nova, 2-dr., 307 engine, PS, \$650. Comiskey, 294-6577.

17' DORSETT, fiberglass, 90hp Evin-rude, Holesclaw trailer, closed bow, deep-V, custom windshield, new skis, safety equip., stored inside. \$2900. Smatana, 299-6278.

ALL terrain cycle, '85 Honda 200X, under warranty, low mileage. Cordova, 268-6496 after 5.

'78 SUBARU 4-wd wgn., 4-spd., manual, 4-dr., 74K miles, AM/FM cassette, ski rack, \$2100. Ritchey, 268-7620.

'73 MUSTANG, V8, AT, AC, AM/FM, \$1200 OBO. Paustian, 255-5127.

'73 6-cyl. MAVERICK, 88K miles, brown 2-dr., AT, AC, AM radio, w/complete set of shop manuals, \$425. Feltz, 293-8732.

'82 PONTIAC J2000, 4-dr., 4-spd., AC, AM/FM cassette, power door locks, 40K miles, \$3700. Kass, 268-5922.

'72 CHEVROLET stn. wgn., power, AC, \$1000. Blackledge, 294-6030, Sun., p.m.

'77 FORD Granada Ghia, AT, PS, PB, below book, \$1695. Kerschen, 821-2848.

'72 DATSUN 240-Z, AC, new interior, AM/FM cassette, \$3400. Shull, 266-6308, 265-6286.

'82 GMC "Jimmy" 4 x 4, 27K miles, 6.2L diesel, loaded w/all extras, \$1000 below book. San Hamel, 266-6869.

'79 BUICK Electra Limited, 2-dr. Landau, metallic brown, vinyl top, 350 V8, 69K miles, every option, \$4500. Guilford, 255-6294.

'82 BUICK Skylark Limited, 4-dr., 4-cyl., FI, AT, AC, sunroof, wires, beige, \$5100. Ewing, 268-6920.

'78 FORD Mustang II Ghia, yellow, V8, AC, gauges, AM/FM, tape, recent trans.-shocks, 43K miles, \$3350. Lewis, 883-8654.

YAMAHA GT 80CC dirt bike, \$150. Brainard, P.O. Box 14397, City, 87191.

'65 INT. SCOUT, 4-cyl., 4 x 4, 3-spd., white spoke wheels, \$950. Helmick, 292-3718.

'82 YAMAHA Virago, 750cc, factory new, under warranty, adult ridden, low miles, one owner, Bell helmet included, \$2K. Oravec, 281-3667.

'75 FORD Chateau van, V8, AT, PS, AC, stereo, tinted windows, spoke wheels, radials, gas shocks, \$2900. Bouchier, 298-5845.

'78 HONDAMATIC 400cc, 50 mpg, 4800 miles, kept in shed, adult ridden. Zucuskie, 881-4086.

REAL ESTATE

MOBILE home, 14' x 80', Solitaire Imperial, located close to Base. Geck, 299-5095.

MOBILE home, 12' x 60', Terrace Park, 2-bdr., 1 1/2 bath, carport, fence, \$10,500. Evans, 293-7942.

CONDO, 1-bdr., between Base & UNM, many amenities, \$32K. Estill, 823-1182.

3-BDR., 1 1/2 baths, near base, \$66K, assumable 10 1/2% loan, approx. \$20K down. Hill, 294-7534.

7.35 ACRES, irrigated, w/river bordering, \$2K down, assume REC \$31K, 10%, 30 years. Conklin, 821-6181.

TOWNHOUSE, 2-bdr., 1 1/2 bath, garage, 3 yrs. old, back yard, \$5K down & assume, or refinance \$47K. Sena, 836-2487.

CEDAR CREST, 2.2 wooded acres in Ponderosa Estates, southern slope, private entrance, \$69,500. Mora, 821-6759.

FOUR-PLEX, Lomas/Chelwood area, 2-bdr. units w/refrig., dishwasher, disposal; laundry room, parking, \$149K, assumable mortgage. Harrington, 294-6368.

5 1/2 ACRES Jemez Mtns., electricity, natural gas, pure spring water, ponderosa pine & meadow, Nat'l Forest surrounding, \$48,500. Hughes, 299-6674.

WANTED

HOUSESITTING positions while home under construction. Sept., Oct., & Nov. for couple experienced in yard & household maintenance, references. Bott, 298-4903.

ROOMMATE: female, share 3-bdr., garage, W/D, near Wyoming & Menaul, non-smoker, no pets, utilities included, \$250/mo. Tanaka, 294-4912.

FRANCISCAN earthenware #73, design has flowers in the center, encircled by three green lines. Brodie, 292-2810.

BABY SITTER for infant, Mon.-Fri., 7-4:30, your home. Moore, 344-6598.

HAVE BODY: need lens for Nikon EM. Prefer normal lens, but will buy wide angle. Ball, 344-4373.

TYPEWRITER, manual, standard, preferably a Royal. Stump, 344-9340.

BOXES for moving. Guttman, 243-6393.

WET-DRY vacuum for home & shop use. Miller, 281-3655.

TOW BAR for small Bronco, ball type to tow 3500 lbs. French, 293-3451.

TWO medium size low cost dog houses. Carson, 281-5115.

LOST & FOUND

LOST: OPAL ring w/2 small diamonds, gold band; lost July 2 at Manzano Field; reward. Vaughan, 291-0966.

Variety Night Tomorrow Offers Disney Cartoons

TONIGHT, The Isleta Poor Boys are back on the Club bandstand to play their popular brand of sagebrush shuffle music while the dining room features a two-for-one special — your choice of prime rib or poached halibut, two dinners for \$12.95. Call 265-6791 right now about reservations.

TOMORROW sees some special programming for families at Variety Night. A parade of classic Walt Disney cartoons is scheduled including Mickey Mouse as The Sorcerer's Apprentice, an excerpt from *Fantasia*. Donald Duck, Goofy, Winnie the Pooh, and Chip 'n Dale are other characters featured in the remaining program. Food service starts at 5 p.m.; the cartoons at 6. There is no admission charge for members and families.

NEXT FRIDAY, Aug. 9, continues the two-for-one specials in the dining room with filet mignon or fried shrimp for \$12.95. Western Flyer plays for dancing.

JUNIOR BOWLERS, Coronado Club-sponsored group for youngsters age seven through high school, hold an organizational meeting in the El Dorado room starting at 7 p.m. Wednesday, Aug. 7. The group bowls

Saturdays at 9 a.m. at Holiday Bowl with league play starting Sept. 7. For more information, call Cis Kelly (ret.), 255-8011.

THE THUNDERBIRDS retiree group holds a board meeting at 2 p.m. Aug. 13. A dinner dance for the group is scheduled on the patio on Tuesday, Aug. 27, from 5:30 until 10:30. Bob Banks Trio plays for dancing. The buffet costs \$5.25. Call 265-6791 for reservations.

UPCOMING EVENTS — Several late August activities scheduled at the Club are worth taking notice of now and maybe making some plans to attend:

TEEN DANCE, Aug. 20, on the patio (tell your youngsters it's the last teen dance of the summer);

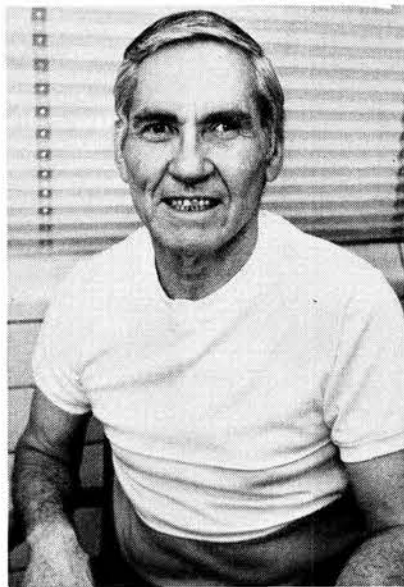
SINGLE MINGLE, Aug. 22, in the ballroom (free munchies, 50-cent beer and margaritas, music for dancing);

AND THE FAMOUS Coronado Club "Fun" Golf Tournament, Aug. 30. Standard golf rules don't apply for this annual salute to silliness. For instance, on one hole you use a pool cue instead of a putter. Everybody wins and, so far, there's never been a casualty although one couple got married. Entrants will be limited to the first 60 to sign up at the Club office.

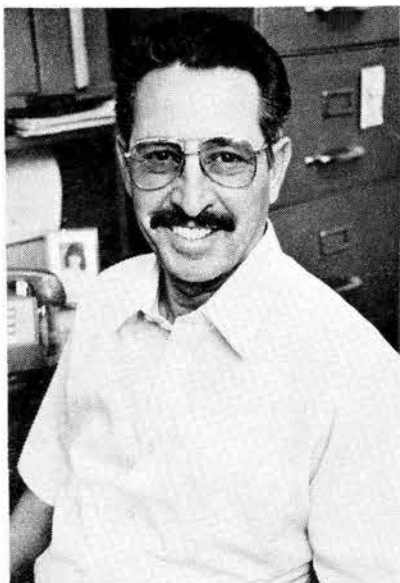
RETI R I N G



Phil Class (7531)



Mac McGuinness (7485)



Arsie Montoya (2515)



Jack LaFleur (2124)



Art Hassig (2853)

feed back

Q. When I recently attempted to attend a meeting at the Technology Transfer Center to which all "interested Sandians" were invited (per an article in the LAB NEWS), I was informed that an admission fee was being charged. It is somewhat disturbing when a Sandian is asked to pay to attend a meeting held on Sandia property during normal operating hours for the profit of a private association. Which SLI describes Sandia policy on this issue?

A. I am sorry for the inconvenience you experienced. Omission of the fee in the article given to LAB NEWS was an unintentional oversight, but the fee was mentioned to all employees who called for a copy of the program.

Sandia's policy on the use of the Technology Transfer Center is not covered in an SLI. However, the charging of a fee to cover costs incurred by sponsors or speakers is neither unusual nor prohibited. In the instance you mentioned, the fee was to cover the cost of refreshments; there was no expectation of making a profit.

P.M. Stanford - 100

Q. When a guard is stationed at carpool-reserved parking areas, the system works, but only while he/she stands there. Why not have a plainclothes guard give out tickets to cars after they park?

A. Reserved, close-in parking was originally established to encourage carpooling as an energy conservation measure. Carpooling benefits all employees in that it reduces traffic congestion and makes more parking spaces available to others.

There is no doubt that using a plainclothes inspector to enforce parking regulations, as you suggest, would result in more citations and less abuse of reserved parking. But security inspectors are currently working considerable amounts of overtime to meet DOE-mandated security requirements. No additional personnel are available. Parking enforcement, by necessity, must be given a lower priority. It is done on a part-time, "as other duties permit," basis. All security inspectors must be available to respond to an emergency immediately; thus it is essential they be in uniform and equipped appropriately.

The vast majority of Sandia employees do abide by our parking regulations. Peer pressure can be helpful in some cases. Specific violations can be reported by calling 844-7875.

J.D. Martin - 3400

Music Hath Charms to Soothe the Savage Head



... "Doctors worldwide are gradually discovering that music therapy — the systematic application of rhythm, melody, harmony, tone, and pitch — has vast potential to influence and benefit both mind and body. As an adjunct to traditional treatments, music can be valuable therapy for physical conditions ranging from insomnia, headaches, and nervous disorders to drug addiction. Researchers have already shown that music can act as a potent tranquilizer. In one study, at the Duszniakachdzroju Medical Ctr., in Poland, 408 patients suffering from severe headaches and painful neurological diseases were split into two groups. One group listened to periodic 20-minute doses of symphonic music; the other group of patients did not. After six months the music listeners needed significantly fewer sedatives and analgesics than the control group did."

Robert Brody in OMNI